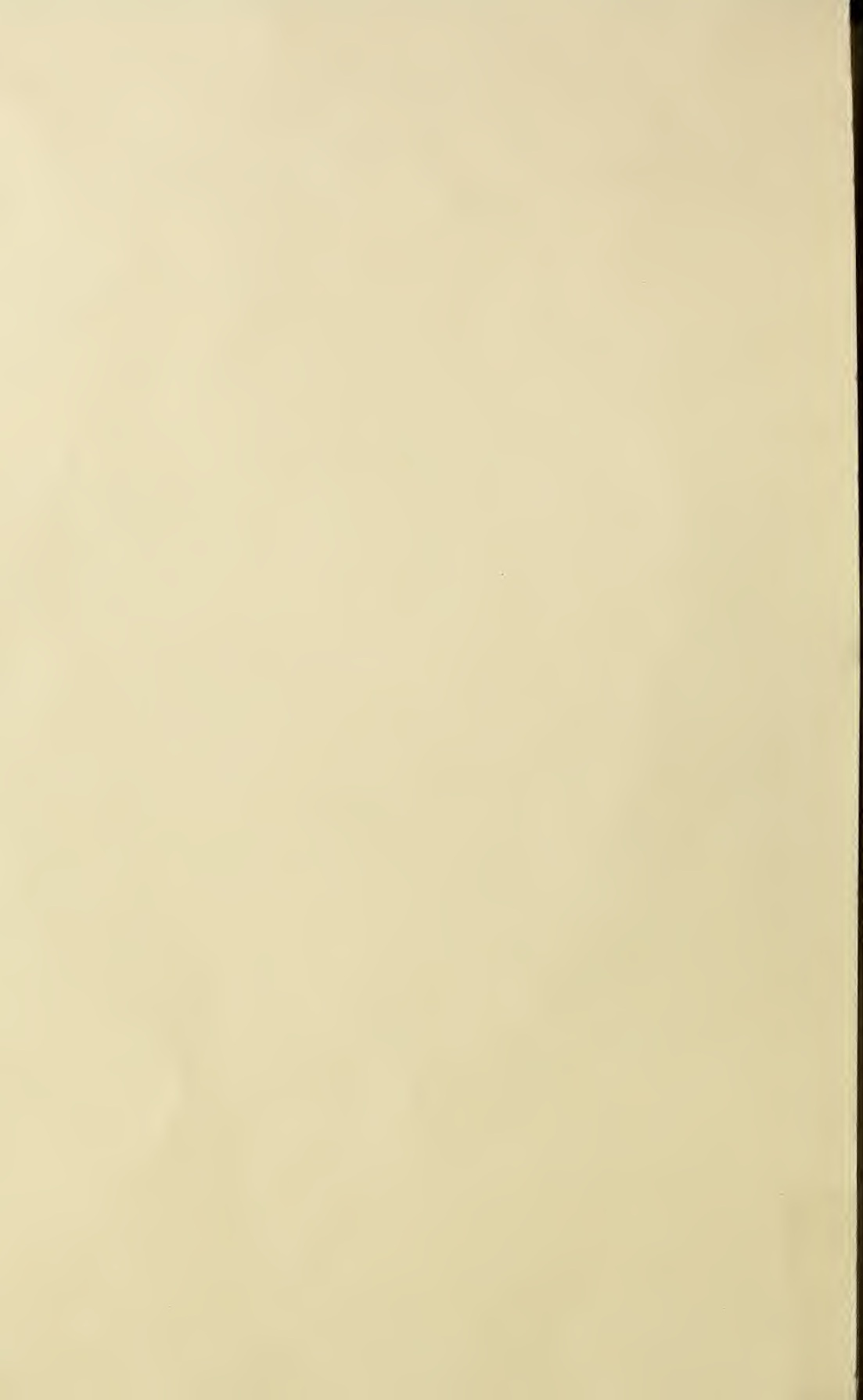


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U. S. Department of Agriculture

THE AGRICULTURAL STUDENT

OHIO STATE UNIVERSITY, COLUMBUS, OHIO



JUNE 1917

CONTRIBUTORS

FIRMAN E. BEAR
JOHN W. TAYLOR
WENDELL P. MILLER
CARL R. ARNOLD

OLEN J. SHONG
LAURA R. RIEDINGER
MABEL CARBOULD
JACOB P. SCHMIDT

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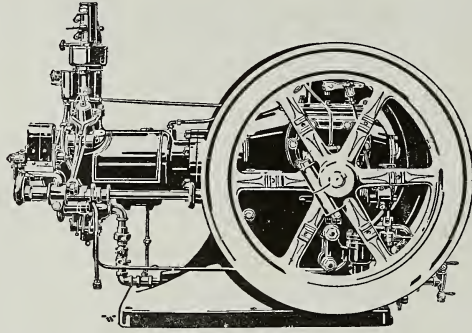
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WAR ON WASTE

IN THE FIELD AND ON THE SEA

The mandate of our general government directs the farmer during the presence of war to make strenuous effort to produce the greatest possible quantity of food for use at home and on the battlefield of Europe. It also is demanded that there be the least possible waste of work and of material. By far the most important crop for this season is that of corn. In the past thirty days the price has been marked up to more than \$1.50 per bushel. The probable minimum price fixed by our government for the coming year will assure the farmer more for his corn than ever received in all former times.

Wisdom dictates to every farmer the great need of using every possible method of increasing the corn output, with the very minimum of waste this season. Read again our April and May messages.



These Corn Roots Within Five Inches of the Surface.

Loyalty to ourselves, to our country, and to our brethren of the world calls for a very strenuous effort at this time. The farmer should heed the message of authority from the Experiment Stations and as well the testimony of all wide-awake farmers who have proved the worth of surface cultivation. Following this method assures the maximum results, other conditions being observed. A prime condition to success is that one observe carefully the full directions furnished by the manufacturer of our surface cultivators.

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best of them all.**

There will one great advantage come out of this dreadful war if it results in bringing all our farmers to see aright that surface cultivation is the only true system. Everyone should beware of imitation and take only the cultivator which bears the name "Tower" on the tongue. If the reader is interested, we urge that he write us at once for our convincing pamphlet, the "Corn Stalk." Address

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Mirror Lake Looking West. New Home Economics Building in Background

THE AGRICULTURAL STUDENT

Vol. XXIII.

OHIO STATE UNIVERSITY, COLUMBUS, JUNE, 1917

No. 10

OHIO'S SHARE IN THE PRODUCTION OF FOOD

Real Problem Is and Must Be Solved in the Open Country; Now Is the Time to Begin Planning for the Wheat Crop This Fall and for Those of Corn, Oats and Potatoes Next Year

PROFESSOR FIRMAN E. BEAR, Department of Soils, Ohio State University

OHIO must do its share in helping the United States of America to play her part successfully in the war now being waged against the German autocracy. The combined activities of the allied nations may be sufficient to complete the task in a few months but we have no way of knowing how long a time may be required. It may be 2 months or 2 years or even 5 years before the Germans will be willing to make terms agreeable to the allies. The Southern Confederacy in our Civil War assumed a successful defensive for a period of almost 2 years after the ports of the South had been much more effectively blockaded than have the ports of Germany by the British navy. In spite of the fact that the North had vastly superior resources in men and money it could not force General Lee to surrender. It is not safe therefore to assume that the present war will be over before snow flies. The Federal Government is said to be planning a three-year's war. The information which the Federal authorities possess is better than ours and it is scarcely logical for us to pit our judgment against theirs. We can do no better than to follow their lead.

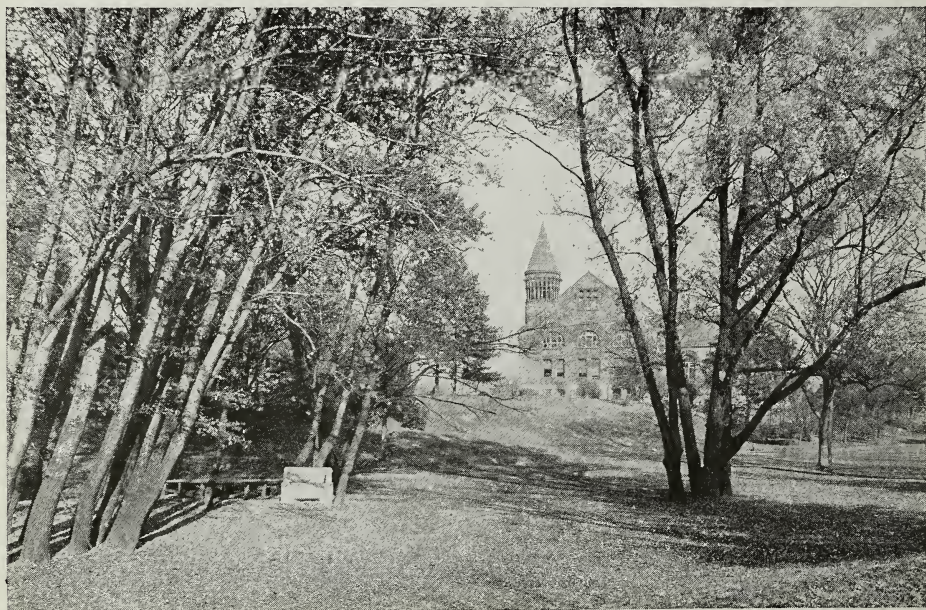
Even if the war should end in a few months it will require sometime for the men now in the armies and engaged in the various other war activi-

ties to return to their former occupations. Normal business conditions will not be restored for some time. The food problem will be, therefore, an important problem for several years to come no matter whether peace is declared in the near future or not. The effect of the war on the food supply has already made itself felt. Large quantities of grain have been buried in the ocean. The vast armies employed in the war have called for larger supplies of food stuffs. Russian grain is not available for export. Australia and India are too far away to make transportation easy under war conditions. The present supply of food available for the world market is lower than it has ever been before. If it should happen that the summer of 1917 were no more favorable for the production of corn, wheat and potatoes than was the season of 1916, the food problem will be the most serious the world has ever known. Before this war is over many poor people will have some very distressing experiences with hunger. We dare not assume that the war will soon be over or that the seasons will be favorable, but we must take every precaution to make our soils as productive as possible.

There is some agitation in favor of insuring the farmer a minimum price for his products. This is only fair to

the farmer since he is compelled to invest a considerable amount of money in seed, fertilizer, rent and labor to produce his crops and has no guarantee that the weather will be favorable. He may not be able to more than recover his seed. We feel quite sure, however, that the reasonably high prices of grains will continue for some years even if no minimum is set by the government. The world's food supply is too low for prices to be in any dan-

are not suited to all soils, especially to city lots after they have been used for the last 10 or 15 years as baseball diamonds by the boys of the neighborhood. Many of our city farmers will have a more sympathetic appreciation of the farmers' problem by the time the summer is over. Nevertheless, while some of the effort being put forth in city lot farming is misdirected we are in hopes that the season will be such that every one of these lots



Orton Hall From Mirror Lake

ger of a sudden decline. We do not feel that the present high prices are entirely due to speculation.

The foregoing is not intended to indicate that the food problem is one which we will not be able to solve. This is not the time to become hysterical. Many of the things now being done in the way of city lot farming are amusing and will result in very little increased production. Any lot is supposed to grow potatoes, altho we have known for years that potatoes

will produce more than the men, who have put in many hours of hard labor on them, had dared hope for.

But the real problem of food production is in the open country, and here it must be solved. We are somewhat in doubt as to whether we need many more acres of crops. We do know, however, that if every acre now in crops were made to produce what it could produce the food shortage would soon be over. The State of Ohio has only begun to farm and we feel that

the strenuous efforts now being put forth will result in a very large increase in production with favorable weather.

The spring crops are already well under way and the weather is largely the determining factor. It is now time to begin planning for the wheat crop this fall and to be looking ahead for next year's crops of corn, oats and potatoes. It will be most disappointing if, after all that our Ohio Agricultural Experiment Station has done for us in the way of solving the problem of making soils produce large crops we fail

to measure up to the possibilities. The department of soils is planning to prepare a series of short articles on the most effective means of increasing the yield of wheat as determined by the various experiment stations. If the present high prices continue until fall a very large acreage of wheat will be sown. It is our hope that the soil may be so well prepared and the seed and fertilizer so well chosen that Ohio will be able to do its part in producing the largest total number of bushels of wheat the United States has ever known.



View of University Campus Looking Westward

LIMITING FERTILIZER BUYING TO ACID PHOSPHATE

Experiments Show That Productiveness Can Be Increased by This Plan

JOHN W. TAYLOR, Graduate Student and PROFESSOR FIRMAN E. BEAR,
Department of Soils, Ohio State University

CONSIDERED from the point of view of the farmer who feeds his crops on the farm and sells them in the form of livestock or its products this subject is of particular significance. Taking it for granted that precautions are used to prevent the loss of the fertilizing constituents of the manure what could he expect in the way of crop yields if he limited his fertilizer to acid phosphate?

In Circular 144 of the Ohio Agricultural Experiment Station data are given on a corn, wheat and clover rotation on which manure treated with acid phosphate has been used. These experiments have extended over a period of 17 years and should therefore give a fair indication of what one could expect over a period of years on the average farm. The manure was treated with acid phosphate at the rate of 40 pounds per ton and 8 tons of this phosphated manure was applied per acre each rotation on the clover sod during the winter previous to its being turned under for corn. The following table gives the yield per acre of the manured and unmanured land as an average for the 17 year period.

AVERAGE YIELD PER ACRE.

Crop	Manured	Unmanured
Corn, bushels	67	31
Stover, pounds	3600	2000
Wheat, bushels	26	10
Straw, pounds	2900	1200
Clover, pounds	5100	2400

It will be observed that the soil was not naturally very productive since the unmanured yields were very low. The yields produced by the phosphated manure were quite high. An average of 67 bushels of corn, 28 bushels of

wheat and 2½ tons of clover hay per acre for 17 years is certainly a very satisfactory yield. The following table indicates that the crops are continuing to get larger as the experiment progresses.

AVERAGE YIELD PER ACRE.

Crop	1897-1905	1905-1913
Corn, bushels	62	73
Stover, pounds	3500	3600
Wheat, bushels	25	27
Straw, pounds	2700	3200
Clover, pounds	4200	6100

Judging from these results it seems possible to grow satisfactory crops of corn, wheat and clover on ordinary soil by the use of 8 tons of manure and 320 pounds of acid phosphate every third year. The question is as to whether the crops grown are sufficiently large to result in the production of 8 tons of manure per acre after they have been fed into livestock.

Let us consider a farm of 160 acres with 150 of these acres tillable and used for cropping, allowing 10 acres for waste land, fences, buildings, lots and roads. These 150 acres would be divided into three 50 acre fields in the case of the rotation of corn, wheat and clover. An application of 8 tons of stall manure and 320 pounds of acid phosphate per acre to the clover sod would require 400 tons of manure and 16,000 pounds of acid phosphate each year. As a return for this treatment we could expect, judging from the experiments previously quoted, the following total crop yields annually.

Crop	Total Annual Yield.
Corn, bushels	3358
Stover, tons	89
Wheat, bushels	1299
Straw, tons	73
Clover, tons	127

According to the analyses of crops produced on the Ohio Station farm these yields would contain the following amounts of fertility.

FERTILITY CONTAINED IN CROPS.

Crop	Yield	Nitro- gen Pounds	Phos- phorus Pounds	Potas- sium Pounds
Corn	3358 bushels	2526	460	930
Stover	89 tons	1442	119	1388
Wheat	1299 bushels	1533	271	277
Straw	73 tons	753	133	1177
Clover	127 tons	5512	465	2845
Totals	11766	1448	6617

It is assumed that in such a system of farming the wheat would be sold as a cash crop. This would leave 10,233 pounds of nitrogen, 1177 pounds of phosphorus and 6340 pounds of potassium in the crops to be fed.

According to the experiments in feeding steers at the Ohio Station as given in Bulletin 183, of the elements of fertility in the feed, 74.7 percent of the nitrogen, 77.5 percent of the phosphorus and 87.8 percent of the potassium were recovered in the manure when the steers were fed in sheds on a cement floor. Using these percentages on the fertilizing elements which would be contained in the crops to be fed we have the following table.

FERTILITY RECOVERED IN MANURE ANNUALLY.

Element	Pounds in Feed	Percent Recov'd	Pounds in Manure	Tons Manure
Nitrogen	10233	74.7	7644	575
Phosphorus	1177	77.5	912	397
Potassium	6340	87.8	5567	515

Analyses of the stall manure used in the experiments at the Ohio Station showed that it contained 13.3 pounds of nitrogen, 2.3 pounds of phosphorus and 10.8 pounds of potassium per ton. The last column in the table shows according to these analyses to number of tons of manure of the same quality as that used in the experiments which would be available for use.

It will be remembered that only 400

tons of manure would be required per year while the table shows that in so far as the nitrogen and potassium are concerned the amounts to be expected in the manure are considerably in excess of that required, there being enough of these two elements to produce over 100 tons extra of manure annually. These are the two elements which most easily escape from manure by loss of urine and by hot fermentation. The margin is so far above the needs, however, that it is considered that such losses would not be sufficient on a well managed farm to reduce the amount below that required to produce the 400 tons. The 8 tons of acid phosphate would, of course, take care of the deficiency in phosphorus and insure a sufficiency of this element for the large yields of crops grown under this system of fertilization.

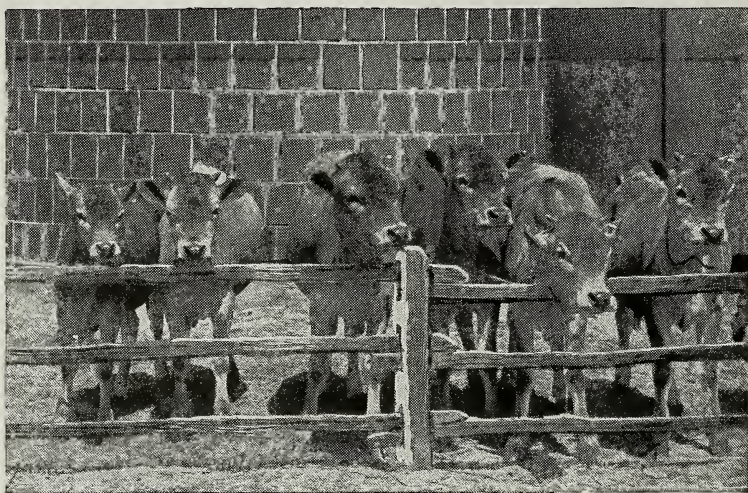
Successful livestock feeders today usually purchase concentrates to balance their feeding ration. The buying of these concentrates has been shown to be a profitable investment. It could be assumed that several tons of cottonseed meal and tankage would be purchased on this farm, in which case the amount of fertility in the manure would be considerably increased. It seems reasonable, therefore, to conclude that it is entirely feasible for the livestock farmer to confine his purchase of fertilizer to acid phosphate and to expect by this system not only high yields of crops but increasing yields of crops as the years go by.

Attention is called to the fact that the total crops removed from the farm, yearly, contain 11,766 pounds of nitrogen while that returned in the manure amounts to only 7,644 pounds. Accepting Dr. Hopkins' statement that if the clover crop is removed from the field, the soil still contains as much

nitrogen as it did before the clover was grown, the total loss of nitrogen is reduced to 11,766—5,512 which is 6,254 pounds. Since 7,644 pounds of nitrogen are contained in the manure the total nitrogen content of the soil of the 160 acres would be increased 1390 pounds each year providing no loss of nitrogen from the manure occurred.

even if no concentrates were purchased.

Of the 7,644 pounds of nitrogen contained in the manure 4,117 pounds come from feeding the clover. This 4,117 pounds of nitrogen represents the actual gain per year from the air by growing clover when the crop is fed on the farm.



The Dairy Farmer May Limit His Fertilizer Purchases to Acid Phosphate and Still Expect Increasing Yields of Crops

IS HOGGING DOWN CORN PROFITABLE?

How a Farmer in Auglaize County Harvested 18 Acres by This Method

CARL R. ARNOLD, '19

IS the method of turning hogs into a corn field and allowing them to harvest their own food profitable?

Wherever corn is grown we find hogs and where the most corn is raised we usually find the largest number of hogs. Harvesting, rehandling and feeding the immense corn crop of the United States is a problem, especially in times of scarcity of labor. Recently feeders have found that good results may be obtained by turning the hogs into the corn fields and allowing them to pull down and eat the corn as they desire it. This seems to be a wasteful method and also a wagon load of corn appears to represent more than 35 or 40 pounds of gain on a dozen hogs at first sight. For these reasons farmers have been slow to take up with this method of feeding and in many parts of the corn belt it has scarcely been given a trial.

Experiments in this line have invariably proven the practice to be a satisfactory one and many farmers claim that they receive a double price for their corn thru it. It has also been shown that hogs make the most profitable gains while in the corn field if they have access to some supplementary crop as clover or alfalfa. This is necessary to supply the desirable amount of protein which is quite essential to hog feeding yet somewhat lacking in the green corn. If no pasture is available the field may be sown to rape after the last cultivation of the corn. This will make a good growth before the corn is ready to harvest and yet will not depreciate the corn yield.

Hogs which are turned into the field should not be of uniform size but some large and also some small ones. The

larger ones will pull down the stalk and may eat only a few bites of the ear when they move on to the next one. Here waste is often encountered; if this partially eaten ear of green corn lies in the hot sun for a few hours, fermentation will take place.

The smaller hogs are unable to successfully pull down the stalks so they must depend upon these partially eaten ears for their share. If care is taken to place the proper number of each size in the field, the torn ears will be entirely eaten and yet the smaller ones will have plenty to eat. Small shotes have been known to run along the cornfield fence and squeal for something to eat when the larger hogs did not leave enough upon the ground for them.

A test of this method was made last season by H. D. Bowsher, a farmer living near Wapakoneta in Auglaize County. Some corn was husked so that a fairly accurate estimate could be made of the standing corn. The field consisted of 18½ acres and the yield was estimated at 42 bushels per acre thus making the total yield of the entire field 777 bushels. According to the market price this corn would have been sold at 76 cents per bushel realizing \$590.52 to the producer.

Next to this corn field was 8 acres of alfalfa and the hogs were allowed to go upon this field and into the corn as desired. Four crops of hay had been cut from the alfalfa field before the hogs were turned in. This stubble was used only as pasture after the hay season was over. Nevertheless the owner did not count this pasture as without value, but in figuring his profits he charged \$1.25 per day for it. The hogs

were in the field 40 days so the alfalfa was valued at \$50.

Every hog was weighed as it was placed in the field and also when taken out so that results could be calculated quite accurately. The actual gain of pork in the 40 days was 15,730 pounds. The market price of hogs at that time was \$8.70 per 100 pounds so the gain in value of the hogs was \$1368.51. Taking away the \$50 allowed for the pasture, \$1318.51 remains as the amount the producer actually received for his corn. But \$590.52 would have been the amount received if the corn had been husked and marketed so the gain thru this method of feeding was \$727.99.

The market price of corn at that time was 76 cents per bushel, but if \$1318.51 was received for the 777 bushels then each bushel was worth \$1.69 $\frac{3}{4}$ or a net gain of 93 $\frac{3}{4}$ cents on each bushel above

the market price. The market value of the corn was \$31.92 per acre while the profit actually received was \$71.29 or a profit of \$39.37 on each acre. The cost of production was the same so that \$39.37 $\frac{1}{2}$ was the actual gain per acre thru this method.

The approximate cost of producing one acre of corn in Ohio is estimated at \$15.80. Instead of getting about double the actual cost by marketing the corn, more than four and one-half times the cost was obtained by allowing the hogs to do the harvesting themselves. More than this, approximately 80 percent of the crop was left evenly distributed over the ground and the fertility of the land was sustained.

Naturally Mr. Bowsher is a hearty advocate of this practice and is preparing to hog off 80 or 100 acres next season.



Hogging Down Corn on a Marion County Farm

EXPERIENCES IN GROWING HOT HOUSE LAMBS

Factors to Consider in Preparing the Carcass for the Market

WENDELL P. MILLER, '18

WHEN spring lambs sell for \$15 a head in January, the New York prices of hothouse lambs do not look so fabulous as they did to my father 20 years ago, after a visit to farms of some eastern lamb raisers. At that time there was a ready market at \$8 to \$10 each for lambs 10 weeks old. They were hog-dressed on the farm and sent to the city to be sold thru the commission trade to the best hotels and restaurants. Since that time there have been periods of high and low prices but in only 2 or 3 years did we fail to average \$8 per head net on the farm for the entire lamb crop. The past two seasons prices have scarcely dropped below \$10 and several times they have touched \$15, with the commission merchant clamoring for the lambs and offering better than market quotations.

The first thing in the production of hothouse lambs is to secure a flock of ewes that will breed during the spring and early summer. On Fairland farm, Sunbury, Ohio, the business was started with a flock of Merinos of the Delaine type. Some experimenting was done to find the proper combination of blood lines to give early fattening, size and primeness. A mutton sire on a Down breed was tried without success, but Merinos crossed with Dorsets brought good results in appearance and profits. These cross-bred ewes were again bred to Dorset rams, and the result was a blocky, easily-fattened lamb. Recently we have introduced Tunis rams into the flock with good effects in increasing the early fattening of the lambs and the dark faces and short hairy wool are well suited to the eastern market de-

mand. The Tunis grade-lamb will be ready a week ahead of its Delaine brothers and the well-fattened carcass has just the proper pinkness of flesh to suit the trade. Usually the Tunis will have a heavy sheath of caul fat which helps out much in the finished appearance of the carcass.

The rams are turned with the ewes in April, but we would rather not have the lambs come till about ready to go to winter quarters. The lambs will then escape stomach worms and will learn to eat grain much younger. The only thing necessary to induce breeding of the ewes is to keep them improving in condition and if possible turn two rams with the flock at the same time or change the rams once a week. Unless the pasture has been good we begin to feed the ewes just before lambing starts. Corn and some protein feed is usually the ration. The lambs will begin to eat when about 2 or 3 weeks old. They like cracked corn and wheat bran, but will soon learn to eat the corn uncracked. Sometimes we add oats, gluten or other mill feed as they will eat more of a combination. Bright clover or alfalfa is almost indispensable and the lambs should not be required to eat it too clean. We keep the corn and hay always before them and refresh the hay three times a day. Water and salt are also necessary in the barn as in the field. For 15 years corn silage has been an essential part of the ewes' ration on Fairland farm. It is fed twice a day and is supplemented with cottonseed meal, gluten, distillers' grains or mixed feed. A light feed of hay is given twice a day. The lambs are fed in a creep shut off from

the ewes by a slat fence just wide enough to pass the lambs.

The term "hothouse" does not mean that the lambs are raised in heated barns. All that is necessary is to have a barn free from wind and rain. Good ventilation and sunlight are as essential to health of ewes and lambs as they are to dairy cattle. We bed the barn lightly each day enough to keep it clean.

dressed, with only the stomach and attached organs removed. In killing the lamb it should be thoroly bled, by sticking with a sharp pointed knife, the artery and vein in the neck close behind the head. Make sure that the artery is severed by noticing that the blood is bright red in color. The belly is shorn close from the brisket to the tail and up the hind legs and between them as in tagging a sheep. Wipe the



Sheep on a Miami County Farm

The first quotations on the New York market are made just before Thanksgiving and it will be well to have a few lambs ready at that time as the commission men give the regular shipper careful attention. The demand will be somewhat cut down at the holidays because of the poultry, the last 2 years lamb prices have about reached the top around New Year. The general demand continues active until after Easter or as long as cool weather lasts.

The trade wants the carcass hog-

skin clean with a dry piece of burlap.

The lamb is now opened from tail to brisket to remove the stomach. The caul fat should be removed as the stomach falls out, and placed where it will stay warm until ready to place over the exposed flesh. The back-set sticks are placed across the back to spread the carcass open. Pin it in place with a good grade of hardwood toothpick. Cut a slit in the fat over one of the kidneys and pull it thru. The finished appearance of the carcass

depends upon careful placing of this fat blanket. The lamb is now hung in a clean well-ventilated room to cool from 12 to 20 hours, usually over night. In the morning a small square of muslin is sewed over the exposed flesh and then burlap is wrapped about the entire carcass. Some commission men ask that the lambs be sent in crates hold-

ing four lambs while others say they can get as good prices if the lambs are sent uncrated with only the burlap wrapping for protection. Here in central Ohio if the lambs are sent out on the morning express they will arrive in New York the next afternoon, and as a usual practice it is best to have them on market Wednesday or Thursday.



Townshend Agricultural Society

Top row (left to right): Kenestrick, Arnold, Sommer, Stewart, Spilker, Pottenger, Baumann, Applegate, Hammond.

Second row: Hoff, Patterson, G. F. Johnson, Howard, Raymond, Joest, Walton, Gibboney, Bailey, Ford, Buckenmyer.

Third row: Price, Hinman, Henning, H. Johnson, Bair, George, Buswell, Reading, W. P. Miller, G. W. Miller.

Fourth row: Kennedy, Hovenstine, Shuck, R. F. Miller, Christen, Olin, Dellefield, Brady, Lang, Moser, Grandle, McMurray.

Bottom row: Coe, Fisher, Barnes, Shong, Budd, Fife, Hunnicutt, Zimmerman, Hatten, Wills, McChesney, Cooper.

SHALL WE GROW SOY BEANS OR COW PEAS?

Comparative Advantages of the Two Crops in the Rotation

OLEN J. SHONG, '17

THE power of soy beans and cowpeas to gather nitrogen from the air, the large amount of organic matter they are capable of producing, and their beneficial effect upon the tilth of heavy soils are qualities which commend both of them in the highest degree to say nothing of their value as feeding stuffs.

Both were introduced into the Southern states about a century ago. During the last generation they have been generally extended into the Central and Northern states, where they have come to stay and before long probably will constitute a part of the rotation.

The choice between the two will depend upon their adaptations to the soil and climate of the particular locality. Cowpeas are well adapted to warm climates and a long growing season and for this reason are more suitable to the Southern than to the Northern part of United States. Only a few of the earlier varieties mature as far north as Central Ohio. Soy beans are best adapted to the corn region but will grow well on almost all types of soils. They grow faster than cowpeas and mature quicker. This fact makes them more favorable than cowpeas for intensive farming. They can be sowed where some crop has failed and still mature before the frost comes. As they grow well during the hot midsummer, they may be sown late in summer for green manuring pasture where the cowpea would be unprofitable.

Soy beans grow more rank than cowpeas and contain a larger amount of nitrogen in the tops and roots than the cowpea. This fact also explains why soybean hay is more nutritious or higher in protein. The cowpea is higher in carbohydrates.

An advantage which cowpeas have over soy beans is that they are less sensitive to acid soils. This accounts for their wider distribution in some localities.

Aside from quick maturity, soy beans are more profitable for their seed production than cowpeas. At the Ohio Agricultural Experiment Station, the average for 23 varieties was 18 bushels per acre, while the two leading varieties of cowpeas averaged only 6.16 bushels. In a short time there will probably be developed a regular market for the seed to be manufactured into oils and cake to be used as stockfood which compares favorably with either linseed meal or cottonseed meal. At present, soybeans are grown more for grain than for any other purpose. This is largely due to a great demand for seed as well as high feeding qualities. On account of the growing popularity as a crop the seed is still selling for \$2 and upwards per bushel.

Soy beans constitute a regular item in the rotation at the Ohio Agricultural Experiment Station. They were substituted for oats several years ago. Thus far the beans have been more profitable than oats without mentioning the increased fertility added to the soil by the nitrogen fixation.

WITH DELMER C. JOBE ON THE FAIR CIRCUIT

How He Fed and Fitted a Flock of Sheep for the Show Ring

HAROLD G. OLIN, '17

What desire backed by determination can do has been shown by Delmer C. Jobe, a junior in the College of Agriculture, who last fall with a flock of Cheviots and a flock of Dorsets won practically all the prizes of importance at leading sheep shows throughout the Middle West.

When Jobe finished his second year

the flock was selected. At the time of the dipping the backs were shorn. On good nights the sheep were turned on clover pasture while good clover hay was fed them. In addition a light grain ration consisting of bran, oats, oil cake and some cracked grain was fed. Later on in the feeding period some rape pasture was used.



Delmer C. Jobe Holding Senator Bibby Jr., the Shropshire Ram Owned by the University

at the first of June, he chose twelve head of sheep each from the flocks of W. C. Postle, of Camp Chase, and H. H. Cherry, of Xenia, Ohio. Half were Dorsets and half Cheviots. These he took to his home farm and began fitting them for the show. The rams were kept separate from the ewes and lambs. July 1 the lambs were weaned while all had been dipped soon after

On August 3rd, Mr. Jobe started with his flock for Galesburg, Illinois, where he won every first prize except champion Dorset ewe as well as carrying off his share of other prizes. At Burlington, Iowa, where the next show was held, he won everything of importance and lost no first prizes.

The first big fair was the Des Moines State Fair. This fair has a

strong show but he came off with everything in Dorsets and lost first only on aged ewe with his Cheviots. Much mangels and cabbage were used while on the show circuit, and alfalfa and clover hay formed the dry roughage.

Following the Des Moines show the sheep were shown at Hamlin, Minnesota, and also at St. Paul. These were not large shows and it was easy to carry off first honors. Minneapolis had a good show. Here his Dorsets won all first except ram lamb, and his Cheviots all firsts except aged ewe. The Wisconsin State Fair at Milwaukee was also a big fair with a good show. On his Dorsets he lost first on his aged ram and ram lamb only while on his Cheviots he lost first place on his aged ewe. At Springfield, Illinois,

he won everything in Dorsets and lost first on his aged ewe in Cheviots to the same man who defeated him at the Wisconsin Fair. This finished the circuit. He had been out 8 weeks lacking 2 days and lost only eight firsts while he had won fifty-six firsts as well as a large number of smaller prizes.

Classes in which the sheep were shown were: aged ram and aged ewe; yearling ram and yearling ewe; lamb ram and lamb ewe; get of sire in which the sire is shown with two ram lambs and two ewe lambs; flock which consists of ram any age, aged ewe, yearling ewe, and ewe lamb; breeder's young flock bred and owned by exhibitor and consisting of yearling ram, two yearling ewes, and two ewe lambs, and champion ram and champion ewe.



Saddle and Sirloin Club

Top row (left to right): Bailey, McElwain, Huber, Miller, Shuck, Eidson, Warner, Richardson.

Second row: Price, Frank, Hatten, Copley, Sprague, Clark, Cassell, Jobe, Hook.

Bottom Row: Hull, Rule, Oakley, Zimmerman, Hunnicutt, Marshall, Thwing, Feller, Koons, Santee.

UNIVERSITY CONDUCTS LOCAL RETAIL TRADE

Demonstrating Possibilities of Creating Demand for Farm Products

RUSSELL W. SMITH, '17

THE agricultural college of the Ohio State University has demonstrated the possibilities of creating a strong local demand among retail customers for farm products of a superior nature raised near a city or large town. The college is located within the city limits of Columbus and all the horticultural and dairy products produced by the college are sold entirely to the retail trade.

cially carnations, roses and chrysanthemums are planted so as to bloom at the time of greatest demand.

Later garden truck and fruit, produced on the University farm is sold throughout the summer, fall and winter. Owing to the fact that products are raised primarily for the purpose of furnishing laboratory work to the students a representative of almost every kind of vegetable, fruit or flower is grown.



Mr. Windmiller, Who Has Charge of the University Greenhouses, and One of the Carnation Beds

The horticultural department handles garden produce, flowers and fruit raised either on the University farm or in the greenhouse which has recently been constructed. No attempt is made to deliver or advertise any of the goods, sales being made entirely to retail customers who call at the horticultural building and buy the products there. Many come in automobiles.

Flowers and such garden produce as lettuce and radishes which bring the highest prices out of season are raised in the greenhouse. The flowers espe-

Last year for example 92 different products were sold by the horticultural department. These included such plants as mushrooms, mustard, sea kale and many foreign varieties.

As a rule no trouble is found in disposing of the produce and often the demand is much greater than the supply. Last fall for example when potato prices were soaring the demand became so great as to necessitate limiting the supply to 1 bushel for each person. Many were so anxious for potatoes that they overcame this difficul-

ty by sending the entire family around at various times and having each one carry away a bushel.

If any difficulty is experienced in selling an article it is usually disposed of thru the wholesale dealers or else canned in the canning plant which is operated by the department. No canning was done during the past year because of the almost prohibitive price of cans and the large demand for fresh produce.

The dairy department also disposed of a large part of its output directly at the University. Butter milk, skim-milk, cheese and some butter and milk is sold directly to customers. Most of the fresh milk and some butter is delivered daily to regular customers and the pimento cheese is delivered to grocery stores in the same end of town or sold to a wholesale cheese dealer who

calls at the college and gets his cheese.

Last year sales in the dairy department amounted to \$25,000. The biggest sales were made from butter, \$14,000 being realized. Seventy thousand quarts of milk were sold no difficulty being experienced in getting 10 cents a quart. All of the milk is pasteurized.

While everything raised or produced on the university farm is intended to be used primarily to give agricultural students practical knowledge of the work nevertheless the income derived from the selling of the various products goes a long way towards paying the expenses connected with this department of the college. Moreover the university has built up a reputation of always having goods for sale which can be depended upon for quality and general excellency.



Horticultural Society

Top row (left to right): Ejbl, Ruetenik, McCandlish, Rundell, Wheelock, C. M. Lewis, Barr, Roth-aker, Hussey.

Second row: Stone, Roth, Slutes, Van Meter, Dutton, Ochs, Scarff, I. P. Lewis, Drain, Rosenberg.

Bottom row: Eddy, White, Reinhard, Prof. A. C. Hottes, Miss Smith, Miss Carpenter, Prof. Wendell Paddock, Prof. L. M. Montgomery, Prof. P. H. Elwood, Prof. W. H. Mosier, H. R. Penton.

ACTIVITIES OF THE POULTRY DEPARTMENT

Plant Well Equipped for Giving a Thoro Course of Instruction

HAROLD W. McCHESNEY, '17

WITH 8 acres of ground all of which is occupied by the various runs and pens and the different buildings, the department of poultry husbandry of Ohio State University is well equipped for giving a thoro course of instruction in poultry husbandry. There are several small buildings for the mixing of feeds, a laying house 15 by 100 feet and the larger, main building 40 by 30 feet where the class work is carried on. These are provided with modern equipment necessary for feeding, breeding, hatching, killing and dressing as well as for a flock of poultry. There are several large incubators, the largest of which has a capacity of 1000 eggs and several smaller ones which are furnished by different incubator manufacturers.

The flock at present consists of 700 laying hens and a few ducks and geese. All the common breeds of hens are represented, the most common being White Leghorns, Barred and White Plymouth Rocks, Rhode Island Reds and Brahmas. The breeds kept are the ones recommended for the farm flock.

The plant is operated primarily for educational purposes in connection with the College of Agriculture. However, it is self-supporting, enough being derived from the sale of eggs and dressed poultry to pay for the feed and labor required for its operation. The 700 laying hens averaged 120 eggs during the last year, making a total of 7000 dozen. These are packed in neat pasteboard cartons holding 1 dozen each and sold at the regular market price to families living around the University. Some income is also derived from the sale of hatching eggs to farmers and poultry-

men in various parts of the state. In the spring 1200 to 1500 chicks are hatched, some of which are raised and the remainder sold. In the fall when the spring pullets are coming on, some fowls are dressed and sold but this practice is not general thruout the year.

The plant is cared for by one man with the assistance of the students who are taking the courses in poultry husbandry. Much of the feeding and caring for the hens is done by the students as a part of their laboratory work.

The instructional work is in charge of Professor Freeman S. Jacoby who has several assistants. Instruction is given on the different breeds of poultry, methods of breeding, incubation and brooding, feeding and marketing, construction of poultry houses, poultry diseases and poultry management. The laboratory work consists of practical work in judging poultry, selecting and grading eggs, killing and picking poultry, mixing rations and feeding and caring for a small flock.

During the present year instruction was given to 40 of the 3-year students, 25 of the winter course students, 20 of the regular 4-year students and 10 girls in the department of home economics. During Farmers' Week lectures and demonstrations were given which had an average daily attendance of 100.

In addition to the instructional work carried on in the University, extension work is given in different parts of the state at farmers' institutes and school houses thruout the country. This work is in charge of Milligan C. Kilpatrick, who with his assistants give lectures and demonstrations at the extension schools.

VALUE OF BIRDS ON THE FARM

Perform Service in Destroying Weed Seeds, Insects and Rodents

OLEN J. SHONG, '17

THE value of birds to the farm lies in the service which they render in the destruction of weed seeds, insects and rodents. A single weed may produce as high as 10,000 seeds in a season, if unchecked these would become a decided menace to the farm. The hoe and the cultivator will help to keep down the weeds, but they still continue to increase on the waste land and along roadsides and from there, eventually spread to cultivated fields.

In the United States, according to the United States department of agriculture, the annual loss due to weeds is \$400,000,000. We can well realize then the importance of protecting the useful seed eating birds, one of nature's best ways of checking this loss. The loss due to insects, grubs and rodents is many times that due to weeds. Have you ever seen the robin following the cultivator picking up the grubs and worms turned over with the soil? In the early morning, when the cutworm is nearest the surface the robin is most busy. By natural instinct the worm is located and the robin can be seen carrying its prey off to its young, ridding the farmer of one of his worst enemies.

We have all seen farmers who complained that robins and catbirds steal their cherries. Hawks steal his chickens by day and owls come down by night. Rats steal his little chickens. Gophers and meadow mice have ruined his grass land. The cutworms have taken his corn crop.

Yet if you were to investigate you would not find a single nestling box to encourage birds but probably 2 or 3 of the old-fashioned scare crows and numerous other devices to scare

birds away, and besides a loaded rifle to bring down the owl or a robin if seen in the cherry tree.

To be sure it requires a philosopher to sit calmly by and see birds take his cherries before they are ripe. To shoot one of these would be only inviting two to the funeral. Years of study and examination of stomachs of 1000 birds in the height of the cherry season show that only $\frac{1}{4}$ of the food was from cultivated fruits. Late cherries coming when there are other sources of food are not molested by birds. The robin takes 10 times as much wild fruit as tame. About 30 percent of its food is comprised of injurious insects as caterpillars, beetles, grass hoppers and bugs. The robin prefers wild fruits, as wild cherries, but these have been removed. Why should we blame it for helping itself to tame fruits? Judge for yourself whether the bird pays for early cherries it eats in June with the bugs and grubs it catches from March to November.

The owl sees by night when rats are active. For this reason they are successful hunters. In lack of knowledge of the good they do, farmers have condemned them and asked their Congressmen to vote a bounty for the purpose of exterminating them, just for an occasional chicken theft. The result is a plague of rodents, and losses far beyond the damage suffered from owls. Farmers' Bulletin No. 54, to be secured at Washington, D. C., tells about the birds to be protected and the enemies to be combatted.

Song birds which furnish cheer and comfort for the farmer are the ones which are also his friends in getting rid of crop pests.

CENTRALIZED SCHOOL BECOMES A COMMUNITY CENTER

How It Has Been Made a Meeting Place for Rural People of Township

VOLNEY G. APPLGATE, '18

THE Adams Township centralized school, located at Rosewood, Champaign County, Ohio, is an example of what rural people can do for the success of their schools. As a community center, it has become the most important meeting place for the people of the township. It has an auditorium with a seating capacity of 350, which is the peoples' schoolroom. Lecture courses, farmers' institutes, extension schools, political meetings, literary programs, community welfare meetings, and all kinds of programs that will make for the betterment of the community are given here.

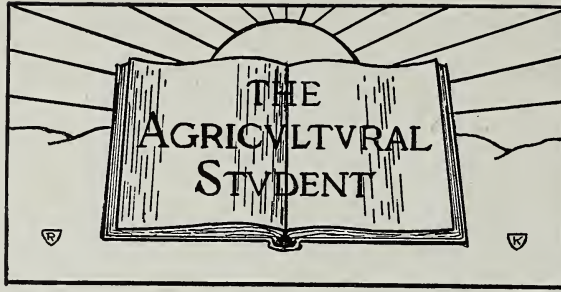
The building, erected in 1911, contains 9 class rooms, a manual training room, a domestic science room, an auditorium, a rest room and 4 play rooms besides the boiler and fuel rooms. It is heated by steam, ventilated by fans, and lighted by actylene. The playground, which contains 5 acres, is adequate for the 300 pupils enrolled. Nearly 250 of these are brought to the school in wagons at a cost of 11 cents per day per pupil.

Many activities are in progress that would not be held in a one room school. Special exercises, consisting of songs, recitations, and stories are held every Wednesday morning in the auditorium. the entire school is required to be present at these programs which are attended by many parents. An annual literary contest between two of the high school societies, Franklin and Irv-

ing, has proven to be so interesting that the auditorium is not large enough to hold the audience. An exhibit of all the different kinds of work done in the school has not only been profitable at the county fair but has helped to unite the school and the community.

Special teachers in agriculture and domestic science are employed. The work of the boys consists not only in studying a text book but they are required to do work in the summer upon a plot of 2½ acres which has been rented. This plot is a real demonstration farm for the community and the farmers are learning some lessons from the school boys. They have conducted experiments with different varieties of corn, different methods of planting potatoes, and different kinds of fertilizers. Fruits and vegetables are grown and sold in the village. Net profits for the first year were \$25.00 or \$10.00 per acre, even tho it was an unfavorable year.

Vacation work for the girls is just as interesting and profitable. One year they did canning and preserving and then served lunch one day at the school. With the proceeds from this, they bought a sewing machine. Now they are making their own clothing besides learning to do fancy work. Old methods are being discarded, new ideas and practices are being adopted, and this school, still young in its development is becoming the pride of a strong social and intellectual community of farmers.



OF
OHIO STATE UNIVERSITY.

A MEDIUM FOR EXCHANGE OF IDEAS BETWEEN COLLEGE AND FARM

Published by the Students in the College of Agriculture.

Established 1894.

Subscription Price, One Dollar the Year.

Entered at the Postoffice at Columbus, Ohio, as Second Class Matter.

STAFF.

R. S. CHRISTEN, '17, Editor-in-Chief.

H. G. OLIN, '17, Business Manager.

E. JOSEPHINE JONES, '17, Home Economics Editor.

B. C. ZIMMERMAN, '17, Assistant Business Manager.

E. W. BUDD, '17, Secondary Agriculture.

H. W. McCHESNEY, '17, Circulation Mgr.

Associate Editors:

Associate Business Managers:

I. P. Lewis, '17.

D. G. Coe, '17.

J. E. Oakley, '17.

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COLUMBUS, OHIO, JUNE, 1917.

EDITORIAL

THE JUNE ISSUE.

This issue completes the twenty-third volume of The Agricultural Student. During the past year it has been the aim to present material in the publication of a practical nature, that would be of greatest service to the students in the College of Agriculture as well as those who are engaged in the practical work of farming. Many of the contributors during the year have been practical farmers, agricultural experiment station workers, members of the federal department of agriculture and faculty members from different agricultural colleges thruout the country. In addition the valuable experiences of those younger in life have not been lost sight of and thus

a large amount of space was given during the year to articles by students in the College of Agriculture.

Several changes have taken place in the work of the Student. The addition of courses in agricultural journalism has brought about increased interest in the work of the publication. These courses will make it possible to have more articles by students dealing with news items picked up in different parts of the state than heretofore. Choosing of the staff has been put on a strictly competitive basis and all members will be expected to have had or to be taking some work in journalism to fit themselves better for the work. It is believed thru these changes that the material can be pre-

pared and presented more clearly and that The Student will become of more value to all of its readers.

Next year the staff will be led by Volney G. Applegate, editor, and Marion V. Bailey, business manager. Both have been working consistently upon the publication and have acquainted themselves with the policies and make-up of the magazine. They are also actively connected with those organizations which are furthering the work of the College of Agriculture. To them we may look forward to the extension of the work of The Student so that it may be of greater service to the agricultural profession.

EFFICIENT LABOR NEEDED.

Led by enthusiasm and a patriotic spirit many will desert their present occupations, in which their labor is most efficient to do agricultural work for which they have neither training or aptitude. This will mean a shortage of labor in the manufacturing industries which might be disastrous to our welfare at this time.

The cost of these experiments to the individual and nation must be considered. Valuable seed would be wasted, fertilizers would be used ignorantly and the land occupied could be more efficiently tilled by skillful farmers. In addition to this voluntary abandonment of customary work it has been suggested that the loafers in the cities be mobilized to do farm labor. On account of the inexperience of these people it is doubtful if this plan would be successful. The farmers are not ready to welcome the loafers and bums from the cities into their homes to associate with their families. Invariably there would be discord and dissatisfaction as more work could be done without them. Such persons know

little about machinery or animals so they could not be trusted with valuable livestock or high priced implements. More might be lost in one day than would be gained all summer by their ignorant help. Factories will not accept them to do the simplest mechanical work so they could not be expected to do the work of the farm satisfactorily as it requires a quick mind, a steady nerve and a kind disposition.

Farming, like any other business, requires efficient labor. Patriotism is not lacking in the rural people and their work is being done as well as possible but the labor will be less efficient if these city loafers are sent out as an extra burden for them to bear. The farmers need help but they do not want parasites.

CENTRALIZED SCHOOLS.

In the movement for the centralizing of the country schools, Ohio has always been in the forefront. Starting with the establishment of the first centralized school in Ashtabula County in 1892, the number has increased until the latest figures in 1912 show that 192 townships out of 1370 have been partially or completely centralized. Many more communities in the state could well afford to discontinue the small ungraded schools which are still in the rural districts. With good roads, comparatively level country and thickly settled rural districts the centralized school is bound to succeed in Ohio.

The consolidated school not only secures better educational facilities for the pupils but also in many cases decreases the cost of maintaining the school system as figures have shown where the plan has been tried. In the common ungraded school, the needs of each pupil cannot be studied and efficient instruction is impossible

In many of these schools all 8 years' work is done by one teacher and pupils are of all ages ranging in age from 5 to 21 years. If all the pupils are put into classes to which they belong there are always too many for good thoro work. Even in the best ungraded schools, the teacher must be one of unusual ability to properly manage her classes and this class of teachers is the exception rather than the rule.

Thru the centralized school, however, the pupils may be graded and teachers may be had with experience in teaching certain grades. In this way the country will be offered the educational advantages found in the cities. The rural centralized school must come to be recognized more and more as an educational necessity.

COUNTRY CHURCH IMPROVES.

It has been said that the slow death of several hundred churches in the rural sections of Ohio is a sure sign of better community life. A statement, so contrary to public opinion, must be explained to prevent injustice. The rural church has been and still is a great power for the good of the country but there have been too many to be properly supported.

This has been due to the dogmas and religious beliefs of many denominations. Whenever one sect erected a church in any community then every other sect proceeded to do the same as they did not want to lose any chance to increase their membership or to compete with other beliefs. As a result

the rural sections of Ohio and surrounding states became dotted with hundreds of unnecessary churches.

As long as competition between denominations was keen the churches were thriving but when the people began to learn that religion is not made up of creeds these same churches began to die. Now one strong church is taking the place of four or five that are dying. It is well that the rural people are beginning to cast aside the petty differences of their forefathers.

Looking into the future one can almost see the strong undenominational community church and the nearby parsonage where the pastor and his family live in the closest contact with rural life. He is not a city man but one who has sympathy and encouragement for the farmer and one who takes his religion into the fields. When the dying churches are dead and the living churches are led by rural pastors who have forgotten denominations the religious life of the country will be greatly improved.

ACKNOWLEDGMENTS.

In presenting this, the final number of the year, we extend our thanks to all those who have given freely of their time in various ways to the work of the publication. We are especially indebted to those members of the faculty who have aided with advice, suggestions and with contributions whenever called upon. To the Makio we are indebted for numerous illustrations which appear in this issue.

LABOR SAVING DEVICES FOR THE HOME

LAURA R. RIEDINGER. Kent, Ohio

ALMOST any other system of heating the home other than with common wood or coal stoves is labor saving. A good cook stove or range should be considered among our essentials; a glass door to the oven is a wonderful help in keeping careful watch of pastry while baking. A hand power washing machine is better than none at all; with water power, a water motor can be used and with electricity, more labor in washing can be saved by using a better washer and wringer. Among the almost indispensable helps that are of moderate price are the fireless cooker, vacuum cleaner, home canner or the steam cooker. While we find that many useful devices that should be in the home are not always there, again we find that there are many so called useful devices upon the market that are not by any means practically constructed. Too often we find that they thru agents usually, have found a place in homes. In some instances the cost has exceeded that for which better and less complicated implements could have been purchased.

Many times we practice self-denial in small ways in order to aid us financially to buy a device which might fill a long felt want. Along comes an agent with his wares, and on a moment's impulse we invest before we investigate for real merits. Or upon going to town, we purchase the very first we see, which we imagine might fill the bill. With the smaller things with which we work, we are often apt to form habits of doing our work all in the same old way; wash with the same kinds of washing powder that we used years ago. Should we stop to

take notice, we could plainly see that the clothes were becoming yellowed by its use. Again, we do not look for improved methods of window cleaning but coat them over white with paste and while drying forget the sun had followed us around the house as a result, we sweat before we are able to remove the streaks.

Conveniences and labor-saving devices for the home seem to be most fitting for discussion at the present time. Almost every woman living under the folds of the "Stars and Stripes" has seemingly awakened to her duty and is endeavoring in some manner to lend a helping hand in the great forward movement that is being taken all over our country as a matter of preparedness against much suffering which is most sure to come to many on account of war between our country and Germany.

The farmer's wife understands better than almost any other class of women the value of good food and the requirements of time and labor that are needed to produce it. Larger gardens are planned, poultry is being raised, and other produce is carefully marketed. In many instances, farmer's wives have taken this work into their own hands as a means of helping along. Then in Red Cross work, church and other societies which are promoting work for the cause heretofore mentioned, she also feels a responsibility. She has an ambition to be listed with those who do their duty along those lines of work. All this extra work seems pressing just now; not however more than does the work that first comes to every housewife, that of keeping her own household in

order and her own table supplied. How are we to find time for all this?

Aside from much planning and the labor of our own hands, we must rely on labor saving devices and conveniences to help us out. Many of the most improved equipments for the home, have recently taken an advance in price just at a time when women are most in need of them. If, however, soft water can be brought into the kitchen sink or laundry and provision made for carrying the waste water out again, it will do much to overcome drudgery in the home. We all know that water is our cheapest and best solvent to which we have access and is a necessity in keeping our bodies and household equipment in good condition. A good lighting system, gasoline, acetylene, or electric eliminates

dirt and lends a charm for the members of the home circle of an evening within the home and an attractiveness from without to those passing by.

With the demand of the times, it almost necessitates us to be cogent thinkers and actors. Even with labor saving devices, it is not always possible for us to accomplish all we map out to do in a day. We, however, owe it to ourselves and to our families to make our work as easy as possible. By systematic saving of small amounts we are enabled many times to purchase equipment for our homes that it would be out of the question at times for us to get by demanding a large amount of money at one time. What we buy in the line of improvements should be of good quality and with proper care and usage they will last for years.

MEATS—VARIOUS CUTS AND HOW TO COOK THEM

MABEL CARBOULD, Ohio Agricultural Experiment Station, Wooster

THOSE who would buy meats most intelligently and economically must know the nature of the different cuts, especially with reference to the proportions of lean meat, fat and bone they contain, and the food value of edible meat cut from the different parts of the carcass.

Meat means to us the flesh of those animals which we use in our daily diet, namely, beef, mutton, lamb, veal and pork. We use also for variety the flesh of fowls, game and fish.

Our meat diet is valuable for the protein it contains, and by care in selection and cooking, the cheapest cuts of meat, as well as the expensive, may be made very palatable and digestible at a reasonable cost. The retail prices paid to the butcher are not determined by the food value of the

cuts; but by the public demand, the tenderness, general appearance and convenience in cooking.

Beef and Veal Cuts.

Loins—Tender meat, steaks and roast.

Sirloin, roasts and steaks, expensive, leaner than Porterhouse; but more bone.

Porterhouse, most expensive, less lean meat, more fat.

Tenderloin, steak and roasts, tender and therefore in great demand.

In Veal—Roasts.

Ribs—Good roasts, proportion bone large, cut next to shoulder most economical.

Prime ribs, good roasts, very fat, tender.

2nd and 3rd cuts, roasts, fat.

4th cut or 6th rib, roasts, more eco

nomical, more lean meat less fat, not so tender.

In veal—Roasted or cut into chops.

Round—Economical cuts, more meat in proportion to the waste in fat and bone.

Center cuts, steaks from 74 to 84 percent lean meat, less bone, more fat.

Top cuts, steaks, more bone and trimmed most.

Lower cuts, not so tender. Swiss steaks, good boiling piece, or beef loaf.

In veal—The leg is cut for cutlets or roasts. It may be boned and stuffed making a fillet.

Rumps, Pot roast—Economical in terms of lean meat and cost. Boiling pieces.

Chuck—Roasts, steaks and pot roasts, tougher but good flavor.

Chuck roast or 5th rib—economical, more lean meat than rib roasts, tougher on account of shoulder muscles, good pot roast or stew.

Steaks, lean and good for Swiss steak.

In veal—Used as a roast.

Neck—Stews and soup, edible meat and waste about even.

Flank—Very fat, sold as tallow, lean meat good to corn, boil or stew.

Plate—Good meat for corning and stews, economical:

Brisket, lean meat, with some fat for corning.

Navel, lean meat.

Shank—Contains stewing pieces and soup bones, cheap.

Mutton and Lamb Cuts.

Leg—Good meat, very little waste, roasts or steaks.

Loin—Tender chops or may be roasted whole.

Shoulder—Roasted or boiled, more bone, meat a good flavor.

Neck—Splendid boiling piece, using broth for soup.

Pork Cuts.

Loin—Fresh pork roasts, or chops.

Hind legs—Cured and smoked for hams.

Ribs—Spare ribs.

Shoulders—Cured and smoked.

Back strip—Very fat, salted and pickled.

Side strip—Bacon strip.

The flesh of a mature animal is more nutritious and more easily digested than that of the young. Beef is the most nutritious meat; mutton ranks next; pork is nutritious but difficult to digest; lamb is tender but not as nutritious as mutton, being less mature; veal is the least nutritious and digestible, but is tender and has a good flavor.

The table of the different cuts expresses the value of each in terms of lean meat they contain, the best method to use in cooking each, and whether tough or tender.

The cuts of meat may be divided into two classes, tough and tender. Meat consists of the lean or muscular tissue, connective tissue of gristle, fatty tissue, bones, etc. The toughness may be due to the amount and kind of connective tissue. As this increases in amount with age and hard work, we find veal is more tender than beef, and the porterhouse steak cut out from the back where the muscles are little used is more tender than the round cut from the leg where the muscles are in constant use. However, it must not be forgotten that in meat where the muscles are well developed it will be tough but juicy and full of nutriment which builds muscular tissue.

The object of cooking meat is to develop flavor, improve appearance, kill any living organisms, and to soften the

connective tissue if it is present in large amounts. The effect on connective tissue depends on whether dry or moist heat is applied.

The tender cuts can have dry heat applied, as in broiling steaks and roasting. The tough cuts should be ground, or cooked by moist heat as in pot roasts, stewing, boiling, Swiss steak, corning, or in the soup pot.

Following are a few recipes by which the tough cuts may be made into nourishing, digestible and very tasty dishes.

Swiss Steak: Beef is usually used for this, but both veal cutlets or mutton steaks may be prepared in the same way. Select steak from the round, or a chuck steak, wipe with a cloth rung out of cold water, cut into pieces for serving, trim away unnecessary skin, fat and bone. Flour on both sides, chop an onion and brown in a little grease or butter, then put the meat to the hot frying pan with just enough grease to prevent sticking, brown quickly, then turn so that both sides are browned. Pour boiling water slowly into the pan, to cover put lid on the pan, and cook in a slow oven or over a simmering fire on top of the stove for 2 hours, or in a fireless cooker

3 hours. When about half done add salt and pepper to taste, moisture must be added from time to time as the liquid steams away. Three-fourths cup stewed and strained tomato added enriches and flavors the meat and gravy. A pot roast may be prepared by this same method.

Boiled leg or neck of mutton: Wipe meat, cover with boiling water, boil 5 minutes, skim, then cover and simmer until meat is tender, 2 hours or more. When half done add peppercorns, carrots, onions, spice, two cloves and any other vegetables desired. Then serve with some of the stock thickened and strained for a gravy. A tart jelly or sour pickles may be served also. This may be cooked in a fireless cooker in about 6 hours.

Stewed beef shin, or rump: Wipe 4 pounds meat, put into a stew pan with one onion, a whole clove, and small bayleaf, a sprig of parsley, carrot sliced, pepper and salt, 2 quarts boiling water. Stew slowly 6 hours or over night in a fireless cooker; melt $1\frac{1}{2}$ tablespoons butter or drippings, add $1\frac{1}{2}$ tablespoons flour and stock to make a gravy. Serve with meat. The remainder of the liquid in which the meat has been cooked may be used for soup.



LINKING THE HIGH SCHOOL WITH THE COMMUNITY

JACOB P. SCHMIDT, Bainbridge, Ohio

IT is estimated that 90 percent of our boys and girls on the farm will become farmers. What are we doing to make them efficient, able to do more than their parents did before them? They must do more, raise more crops, for all civilization depends for progress upon having each farmer raise more than his father.

From 1910 to 1914 Ohio's population increased 20 percent, her production 1 percent. The increased demand today is not being supplied with all our modern machinery and efficiency, simply because the efficient ones, the leaders are not being kept on the farm to organize our greatest industry as it must be organized in this day of scientific organization for maximum production. These leaders are not kept there because no training or opportunity for that kind of service is offered.

If our schools are to blame who is responsible? Our leading educators have long felt the need of a change but they did not dare disturb too much the place of the country school in the hearts of the country folk. The greatest obstacle, however, is that parents do not cooperate. There are many sections in Ohio where the land is too poor or too rough to raise anything but a crop of boys and girls. And still, any other crop receives much more attention so far as cultivation is concerned.

Parents tell us that they are not getting their money's worth because of the small attendance of the rural high schools. If the parent would say in the right tone of voice "Son" or daughter as the case may be, "you go to school," you may believe that the attendance figures would boom. But we must go

back past the high school for 50 percent of our boys and girls drop out at the eighth grade. Ohio's average percent of attendance of those enrolled is about 66, so there must be something wrong down in the grades.

It is too true as patrons tell that some communities cannot support a school as for example, districts whose assets are largely beautiful hill scenery. Sufficient state aid for consolidation and operation of such places must be had or abandonment and probable conversion into forest ranges is the only solution for such problems. But for regions that can support a high school, if they will, the entering wedge is service. O. H. Benson, of the United States Department of Agriculture, who is in charge of the boys' and girls' club work, says "Prejudice leaves where even an avowed enemy does something for my boy and it is true of every normal parent." Very many country folks look upon University extension workers and state research men as white-collared experimenters. To show such parents that high school is worth attending their boy or girl should be given some definite project that will produce results in their own backyard, home, farm or community.

Two considerations must be balanced in formulating any system of education, first the needs of the community and second the needs of the child. A boy may know the height and depth of every mountain and sea, know the length of every river in the universe and still not be near the manpower for his community that he might be. So let the first definite project be to change our rural high school and

grades curriculum to make it fit the community in which it is located and then give our attention to the individuals. Those two things remember are the fundamentals. We have at hand a suggested four-year course in agriculture for the Medina County high schools. There is no Latin in it. Some one has suggested that a year of Lincoln or Franklin for Cicero or Caesar might be substituted. But the course speaks for itself. Notice the gradual development of science study. Suggested four-year course:

First Year

Course	Hours
Algebra	1
English	1
General Science	1½
Botany	1½
Farm crops	1½
Gardening and fruit	1½

Farm carpentry 2 periods per week.

Second Year

Course	Hours
English	1
Plane Geometry	1
Farm animals	1½
Dairying	1½
Zoology	1½
Farm accounts	1½

Woodwork or forge 2 periods per week.

Third year.

Course	Hours
Chemistry	1
English	1
General History	1
Field management and crop rotation	1½
Soils and fertilizers	1½

Mechanical drawing and blue prints 2 periods per week.

Fourth Year.

English	1
American History and Civics	1
Physics	1
Farm management including marketing	1½

Farm engineering1½

Cement work and building construction 2 periods per week.

The third and fourth years' work may be alternated in small high schools.

This course is calculated to meet the needs of the community and that fulfills the first requirement for community service. Some other section, say Lawrence County, may demand greater attention to fruit growing. It is well to have the study of farm accounts come early to show the boys and girls that farming is really a business.

As to the individual, find out first what the boy or girl can do better than anything else. Plan picnics, festivals, community days and exhibitions. Organize for any of these. For example we have an annual township picnic and fall festival in our school with exhibits. The school is organized as a team, the best geologist is appointed leader of a committee to make a rock collection, best botanist for a flower collection, and so on. The whole affair for the town ship is managed thru the high school.

A big array of exhibits was gathered to compete for the 225 premiums, three prizes to each class with none less than 25 cents. Each individual in the township had a chance to do something definite for his school, a chance to exhibit his skill and knowledge.

Premiums are given to schools as a whole, in this case they were books for a standard library. This exhibit being given at the end of the year, each school's premiums were totaled in money value and deposited as a check with the clerk of the board of education to be given to the teacher or school next September.

Such a project requires time and effort on the part of the teacher and the high school. What is the result? It

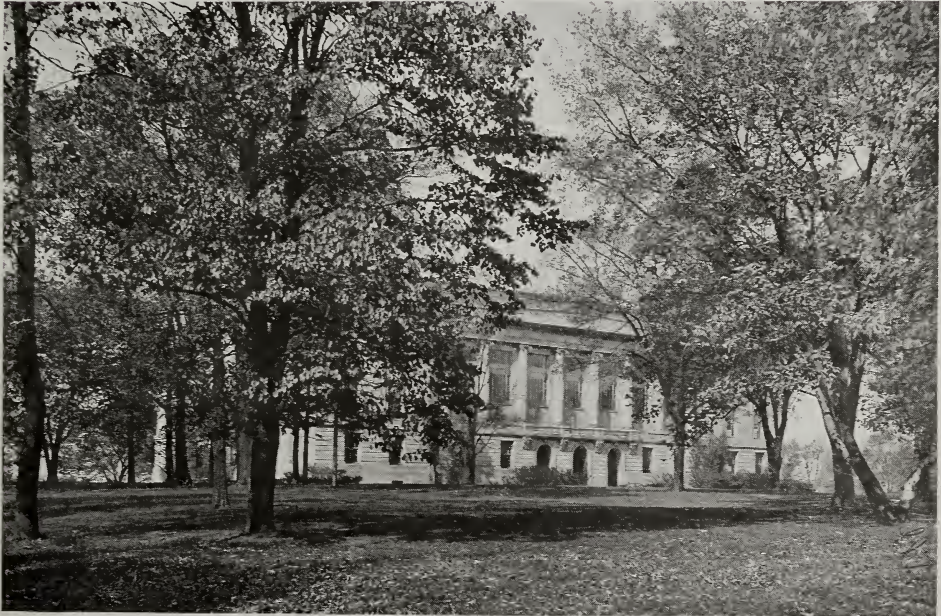
shows that the boys and girls can do something worth while and it has made other boys and girls wish they were high school leaders.

The youth can be reached by a personal conference, a study of records, a visit to his home or any other way possible. By getting in touch with the state leaders of boys' and girls' clubs, showing the youngster his possibility and then organizing pig clubs, corn clubs and home making clubs, it will be demonstrated to the parents that one can learn to do practical things in school.

We wanted some athletic equipment at our school. "What," said a member of the board, "buy something to play with! I can give my boy all the exercise he needs at home." Taking

the cue of Mr. Daley, of the Pickaway Township centralized school of Pickaway County, it was shown how much better the feeble-minded boys were provided for. The equipment was provided and when the community found they were doing something to help boys enjoy things team work was brought about. Rev. C. O. Gill, former captain of Yale's football team, says that farmers cannot cooperate because they never learned to play together.

With the high school boys and girls as leaders, new games are tried or invented. Social stunts are introduced. Boys and girls are made responsible, they are given experience and initiative is developed. That is the greatest service to the individual and the quickest way to link it up with the community.



University Library

WHAT SENIORS AND ALUMNI ARE DOING

Ray F. Donnan, '14, was recently appointed county agent in Lucas County. He is a native of Delaware County and attended Ohio Wesleyan University but was graduated from Ohio State with the degree of Bachelor of Science in Agriculture. He taught agriculture in a Minnesota high school for one year and has since been teaching in the Perry high school.

Paul Gerlaugh, '13, is the new agricultural agent in Wood County. He was born on a farm near Osborn, Greene County. During his college course he remained at home one year to operate the farm. Since graduation he has been teaching and doing experimental work in the animal husbandry department of the Pennsylvania State College. His work will begin about July 15.

Joseph F. Barker, '08, has recently been appointed soils specialist in the extension service of Ohio State University. He was born in Athens County and attended Ohio University for 3 years but was graduated from Ohio State with the degree of Bachelor of Science in Agriculture. He received a Master's degree from the Iowa State College of Agriculture in 1910. While at this school he was assistant professor of agronomy for 2 years. He left the West to take charge of the soil investigations at the New York Agricultural Experiment Station. His work in Ohio will begin about July 15.

Edwin A. King, '15, and Mrs. King (Helen M. Wetmore, '14,) announce the birth of a daughter at their home, Vanlue, Ohio, on April 2.

Arthur C. Brookley, '12, is teaching agriculture and biology in the science department of the Thornton Township high school at Harvey, Illinois.

Harry "Dusty" Roads, '16, former hammer thrower on the Ohio State team, in a recent communication to Charlie Williams, janitor of Townshend Hall, says, "I am farming 181 acres and living alone in one room. My nearest neighbor is one half mile away and that is too close."

He is operating a farm in Highland county.

Thomas W. McKinley, '15, is located at Requa, California, and is working in the United States Indian Service of the department of interior.

Lulu Strader, '14, formerly of Lockbourne, Ohio, has charge of the commercial and domestic arts department in the high school at Divernon, Illinois.

GRADUATES IN THE CLASS OF 1917.

J. R. Allgyer is farming at West Liberty.

Harry F. Barnes is farming at home.

Harold H. Barrick is back on the home farm at Croton.

Sidney W. Bliss is with the Ohio Experiment Station in the soils department.

Paul G. Bradley is another home farmer at Hudson, Ohio.

George L. Brown is farming at New Lexington.

Eugene W. Budd is a Perrysburg farmer.

Ralph L. Bushey will probably go into dairy work.

George L. Cassell is farming at home in Mt. Vernon.

Ralph S. Christen is farming at Le Moyne, Ohio.

Luke Cooperrider has been appointed superintendent of one of the recently established employment bureaus in the southern part of the state.

Ernest R. DeHaven is on the home farm at Cuyahoga Falls.

Walter S. Donaldson is also at home at Carrollton.

Howard A. Dunkel is farming at Osborn, Ohio.

Griff Eidson has obtained a position with Swift & Company, and will be connected with the fertilizer department as district salesman.

Selwyn B. Ewing is a home farmer of Vanlue.

Walter D. Feller is at home at Mt. Blanchard, farming.

Edwin G. Flowers is farming near Cincinnati.

William L. Frank has taken several government examinations and is expecting an appointment soon.

Paul R. Fudge is at home near Eaton.

James I. Hambleton has been teaching at the University of Wisconsin for several months.

Bernard Hatten is farming at home near Delaware.

Elmer J. Helbig has obtained a position with the dairy department.

William K. Hershberger is a home farmer of Lancaster.

Fred H. Hook expects to take up dairy work.

Willis B. Hooper is connected with the council of national defense in the employment department.

John E. Hull is farming at Sharon, Penn.

Walter D. Hunnicut is connected with the agricultural extension department of the university.

Howard G. Jenkins is on the home farm near New Carlisle, Ohio.

Warder B. Jenkins is in the officers' training camp at Fort Benjamin Harrison.

Arthur W. Jones is farming at home near West Unity, Ohio.

Hamlin C. King is in partnership with his brother on a farm near Vanlue, Ohio.

Jesse B. Lane will farm near Stockport, Ohio.

Carl C. Lowe is located at Fort Benjamin Harrison.

Harold W. McChesney is working on the farm of C. F. Sprague at Lima.

John D. Macklin has enlisted in the United States marine service.

Herbert B. Marshall will farm at Beaverdam, Ohio.

Raymond F. Miller is farming at Reynoldsburg, Ohio.

Harold G. Olin is farming at Bellville Ohio.

Harry C. Solether is farming with his brother at Jerry City.

John W. Stratton is working on a farm at Higby, Ohio.

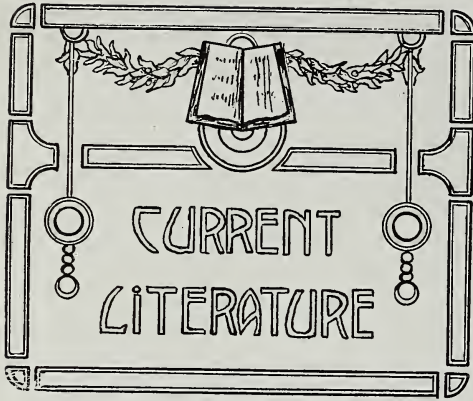
Howard F. Thwing will work in the food department of Swift & Company at Chicago.

Edmund H. Vance is working on the Dunkel farm at Osborn.

James M. White is farming near Washington, Pa.

James W. D. Williams will farm at Wilmington, Ohio.

Brenton C. Zimmerman will farm at Washington C. H., Ohio.



“Equipment for the Farm and the Farmstead,” by Professor Harry C. Ramsower, head of the department of agricultural engineering Ohio State University, is a new book published in the Country Life Education Series which contains a discussion of the general problems of equipping the farm. The material in the book has been taken up both from the viewpoint of the farmer who is seeking ways of making his work easier and from the standpoint of the student who is to become the farmer of the future. In the presentation of the material the practical application of the principles involved were emphasized. In the beginning chapters of the book attention is given to a discussion of some of the simple principles of mechanics after which the different phases of farm engineering work are taken up more in detail. Special consideration is given to the problems of lighting the home, water supply, sewage disposal for farm home and power for the farm. 521 pages, 543 illustrations, \$2.25. Ginn and Company, Boston.

“The Modern Gas Tractor,” by Victor W. Page, has been revised and enlarged and a second edition has been

published. This book is a practical treatise containing information on all phases of up-to-date gas tractor engineering which is developed in a way that it can be understood by one who has not had a large amount of experience or technical training. Chapters are given to the scope, advantage and application of power traction, design and construction of gas tractor power plants, cooling and lubricating the power plant, functions and construction of clutch, gearset and differential, the tractor frame, wheel and axles, driving and housing the traction engine and traction engine troubles and their elimination. A special chapter is also devoted to the latest designs of tractors now in use. The work is well illustrated thruout. 504 pages, \$2.90. Norman W. Henley Company, New York.

“Productive Dairying,” by R. M. Washburn, professor of dairy husbandry, University of Columbia, is another book published in the farm manual series. It has been written especially for use in general courses in dairying given in the high schools, colleges of agriculture and rural consolidated schools. The material in the treatise which covers the entire field of dairying in a general way is divided into seven parts. Part I deals with the why of dairying, part II, the dairy breeds; part III, the care and management of dairy cows; part IV, winter feeding; part V, clean milk production; part VI, farm dairying; and part VII, market milk. A chapter on common diseases is written by Dr. W. L. Boyd, assistant professor of veterinary medicine of the University of Minnesota. 432 pages, \$1.75. J. B. Lippincott Company, Philadelphia.

HOW I DID MY CLUB WORK

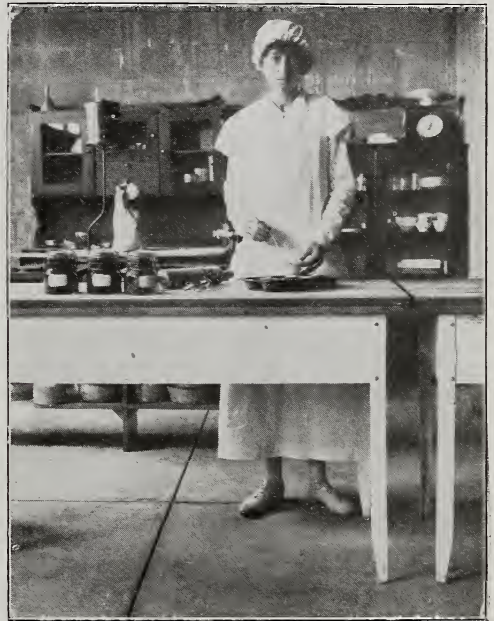
Miss Mary F. Huston of South Solon, Ohio, who won the home making contest trip to Ohio State University during Farmers' Week in telling of her work says "The home making club work interests me principally because its object is to teach young girls the science of cooking. The lessons in the club work explain the value and the composition of the common foods and the necessity for thoro cooking and the value of a variety of dishes. It teaches us how to make our own bread and to be economical in using and canning home products during the summer for the winter's use. They also teach a diversity of cooking and how to make appetizing dishes. The food cooked and canned in the home not only tastes better but is of better quality.

The club work gives an opportunity for those young girls to learn to cook whose mothers are too busy or indifferent to teach them. The club meetings were the most interesting part of the work, the meetings being held at the club leader's home or in the domestic science rooms at the school house. First we held a brief business session and then we talked over the advanced lessons after which each member related her experiences in the preparation of the food for the previous lessons. Often after this we played games and visited.

In the home kitchen, I was fairly successful at what I attempted and the family urged me to repeat many of the dishes that I prepared. Before this I had not cooked many things and was rather awkward. My club work has

made me more sure of myself and of what I am preparing.

I enjoyed all the work but especially I liked to make bread and rolls. I am not very efficient yet but I am going to try until I make my ideal loaf and then I am going to keep on baking 'ideals.' The short process bread is exceedingly simple and in my estimation it is the most satisfactory. The long process of



Mary F. Huston

course makes a finer bread. I will be a senior in high school this year and most of my time will be taken up, otherwise I would continue with the work thruout this year. I certainly feel that I have been greatly benefited by the club work and I appreciate the opportunity that the boys' and girls' club work has given me to become an efficient and economical home maker."

SUCCESSFUL COOPERATION IN PAULDING COUNTY

GUY F. JUMP, '18

That the successful operation of a cooperative elevator in one section leads to the promotion of the cooperative spirit in the adjoining community is shown by the example of two towns in northwestern Ohio, Hicksville of Defiance County and Antwerp of Paulding County. For several years a cooperative elevator at Hicksville has been paying from \$15 to \$20 dividend on a share of \$100. This led to the establishment of a cooperative elevator at Antwerp, the organization of which was established January 1.

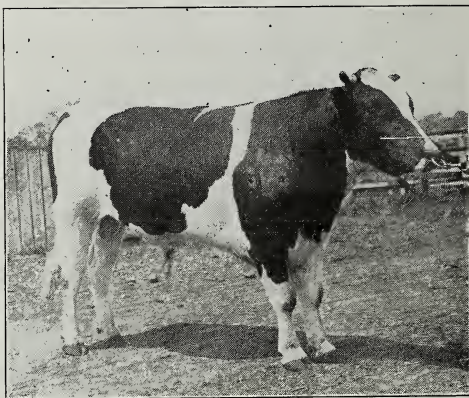
The Antwerp organization bought the Peoples' Elevator, a private company, and on April 1, 95 farmers had secured 4 shares each at \$25 a share. Only farmers are eligible to become stockholders but there is no limit to the number of shares one man may buy. It is believed by the members of the organization that the limiting of membership to farmers alone will have a greater stimulus toward cooperative effort than if the business men of the town were allowed to buy shares which would necessitate the declaring of a dividend to non-producing stockholders.

The organization will buy and sell from members and non-members on a safe margin and at the end of the year grain farming section, the crops being the capital stock is in reality preferred stock with a low dividend. After all expenses and necessary repairs are paid, the rest of the earnings will be divided according to the amount of business done by each stockholder. The profits made from non-members will be divided among the stockholders according to the number of shares each holds.

The Antwerp organization is identi-

fied with a national cooperative association which has its headquarters at Greenville, Illinois. The local organization is one of the 500 local exchanges operated by the national association which deals in farm machinery, binder twine, tractors, coal, etc.

The community around Antwerp is a grainfarming section, the crops being corn, oats and wheat. The farmers sell all their grain except what is necessary to feed to their horses.



Ohio Yet, 170474, calved February 12, 1915, recently sold to head a Holstein-Friesian herd in South Carolina. This animal was sired by Sir Duke Walker, 71158, formerly head of the Holstein-Friesian herd at the University; Ohio Yet's dam is Ohio Colantha Bakker, 127761, of the University herd that holds a record of 838.1 pounds of butter.

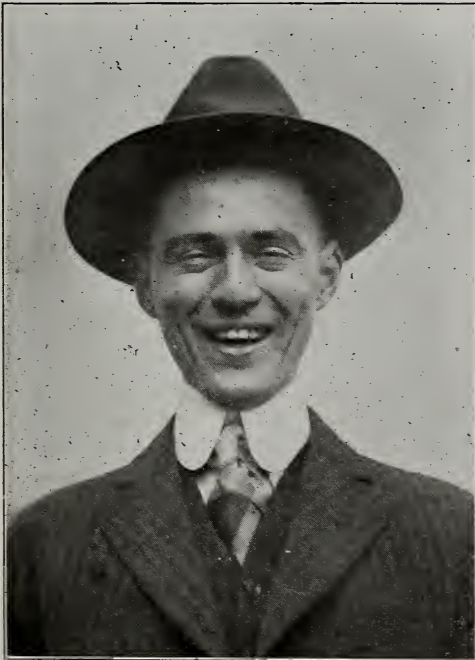
Sir Duke Walker was also the sire of Madam Colantha Bakker, of the University herd whose record is 923 pounds of butter.

A recent report on the correspondence courses offered by the Agricul-

tural College Extension Service shows that the men who make up 87 per cent of the students, represent 144 occupations. The list includes farmers, artists, ministers, penitentiary inmates, nurses, ball players, clerks, teachers and factory employees. Eighty percent of the men are over 22 years of age. Nearly all of the 156 married women enrolled are over 26 years old. One half of the unmarried women are between 18 and 26 years.

Soil fertility is the most popular subject with poultry farming, orchard fruits, corn culture, alfalfa culture, concrete work, and potato growing following in order. Some of the work is new and thus has not had equal opportunity for registration.

"OLD-BOY" BURT.



After taking 2 years' work in the College of Agriculture Carl H. Burt, of Apex, North Carolina, has returned home where he will begin to develop

a Shorthorn herd. Burt knows pedigrees from Hubbard to Maxiwalton Pride II, the university bull that was first in the 2-year-old class at the International Livestock Exposition last year.

So enthused over Shorthorn cattle is Burt that he spent one show-circuit season with Carpenter and Ross, of Mansfield.

He secured his first breeding animals from Ohio.



This bull, the son of Friend Hengerweld DeKol Butterboy (29303), has been secured to head the Holstein-Friesian herd at the College of Agriculture.

His dam is Maplecrest Pontiac Ogden DeKol, 141156, whose sire is Pontiac Aggie Korndyke, who has 6 daughters in the 1000-pound class. His sire has 33 A. R. O. daughters and 5 above the 30-pound class. He has 19 sons with 24 A. R. O. daughters and 18 daughters with 34 A. R. O. daughters.

A. W. Hayes, of Madison, Wisconsin, has been appointed county agent for Lorain County, to begin work July 1. His headquarters will be in connection with the office of the county superintendent of schools of Elyria.

He was raised on a farm in central Illinois and was graduated from the

College of Agriculture of the University of Illinois in 1907. The next 3 years were spent as a teacher in the high school, the summers being given to the Illinois Soil Survey. Mr. Hayes farmed 400 acres in partnership for 5 years and was county agent in Sullivan County, Indiana, for 3 years. During the past year he has been taking graduate work at the University of Illinois and the University of Wisconsin in rural economics.

"The Breeding of Animals," by F. B. Mumford, dean of the College of Agriculture and director of the Experiment Station of the University of Missouri, is a new book treating of the principles of genetics as they apply to the practice of animal breeding in accordance with the conclusions reached by biologists. The author in his treatment of the material groups the problems of the breeder under three subjects, reproduction, inheritance and development. As the problems of the animal breeder are in the main different from those of the plant breeder, the author places special emphasis on the principles and practices that belong to the provinces of the animal breeder yet he does not neglect the lessons to be learned from the field of the plant breeder. 310 pages, \$1.75. The Macmillan Company, New York.

"Beekeeping" by E. F. Phillips, is a book that is the result of an effort to present a logical discussion of the various phases of the subject of beekeeping. It is not a book of rules to which one may go for directions in performing each day's work, but it takes up the activities of the bees as they exist. Beekeeping as an occupation, the life processes of the individual, management, swarm control, production and marketing of honey, care of bees during different seasons of the year and diseases and enemies of bees are some of the phases that are taken up and discussed in this work. The book is one of the Rural Science Series and is edited by L. H. Bailey. 457 pages, \$2.00. The Macmillan Company, New York.



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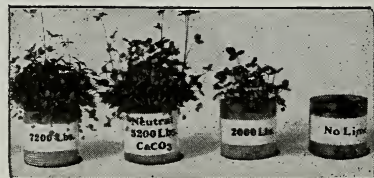


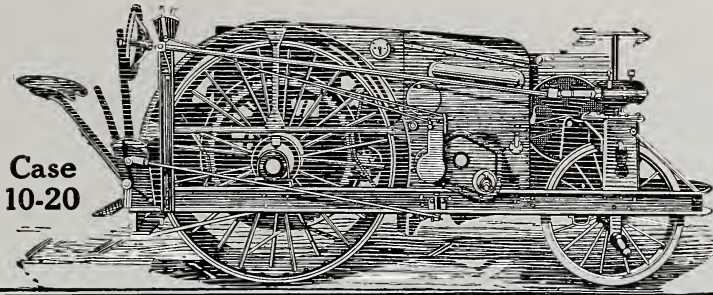
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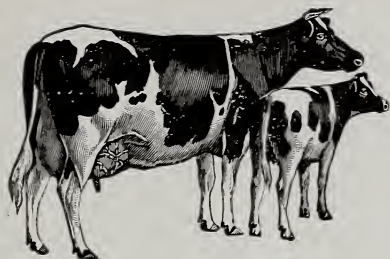
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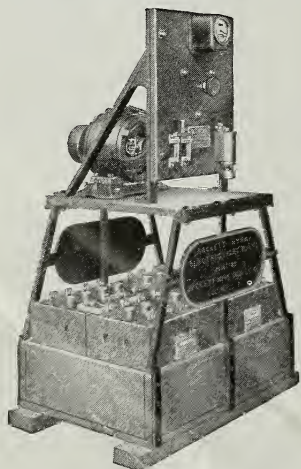
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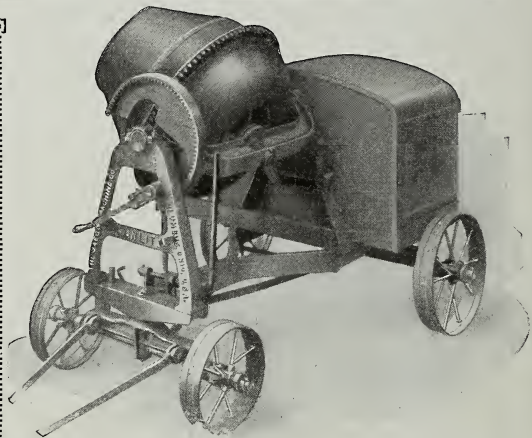


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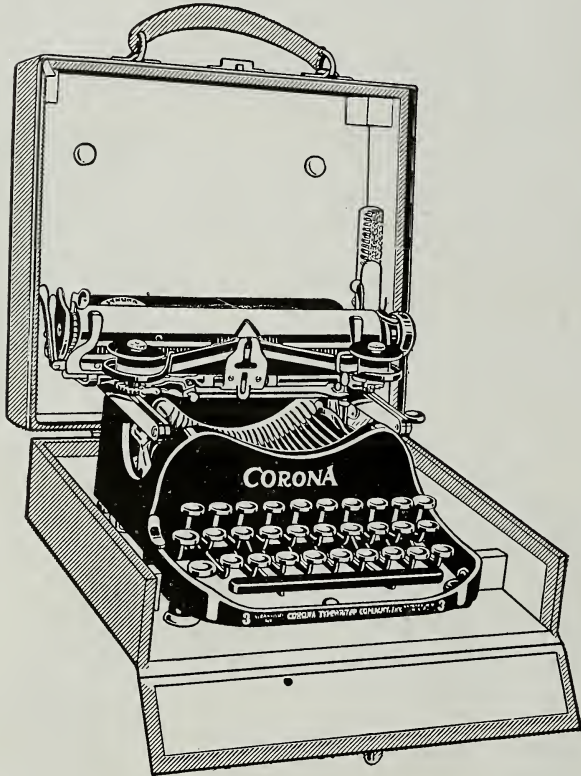
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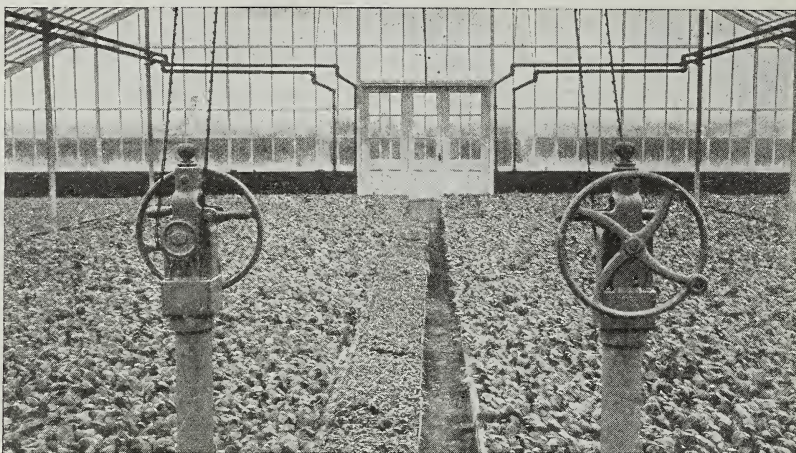
It took good sows and good boars to produce them. They came from ancestors of the big type. Those smooth quick feeders with strength, big bone and good action. Capable of doing their own harvesting for a large part of food from blue grass, clover and alfalfa pastures.

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Charlie gets three crops of lettuce with two between-the-row-crops of radishes. Sometimes he has cucumbers the first half of the year and tomatoes the last half. All are money makers.

Make More Money on the "Off Months" Than on the "On Ones"

WHEN I was a red-headed kid wearing copper toed boots, we never done much of anything on the old farm Winters; only kind of looked after the cows; "go to town;" and every once in a while, hitch up to the bobs and take a crowd down to the corners for a good hot oyster stew supper.

Last January, however, when I went back for a visit to the old town, I noticed hampers of lettuce being loaded in an express car. Will you believe it, some of

it was grown on our old place, in a fine big iron frame greenhouse 56 feet wide and 300 feet long.

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His figures proved it beyond all argument.

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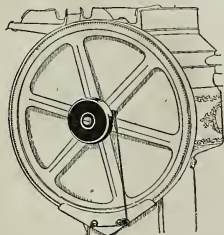
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